

HOW WE BUILD



OPEN BUILDING INSTITUTE



GRADING



GRAVEL

FIRST, THE SITE IS GRADED TO FORM A SLIGHTLY ELEVATED PAD WITH RAINWATER DRAINING AWAY FROM THE BUILDING.

AFTER THE GROUND HAS BEEN PREPARED, A 6 INCH LAYER OF GRAVEL IS POURED ON THE PAD.

A LASER LEVEL IS USED DURING GRADING TO VERIFY THAT THE ELEVATION IS CONSTANT THROUGHOUT THE FOOTPRINT OF THE BUILDING.

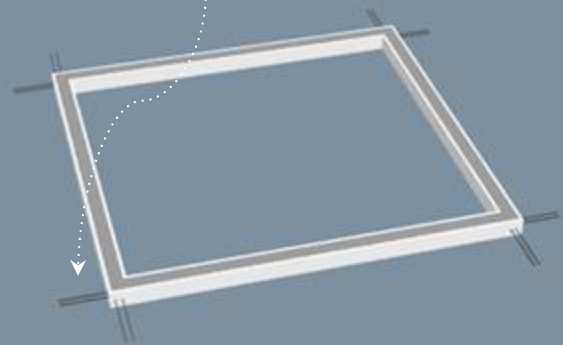
RESOURCES

GRADING PROCEDURE | FOUNDATION PROCEDURE



STEM WALL FOUNDATION

REBAR



STEM WALL FOUNDATION FORMS ARE BUILT FROM WOOD AND REBAR—AND THEN FILLED WITH CONCRETE. ONCE THE CONCRETE HAS CURED, THE WOOD FORMS ARE REMOVED AND A GASKET + SILL PLATE ARE INSTALLED ON TOP OF THE FOUNDATION.

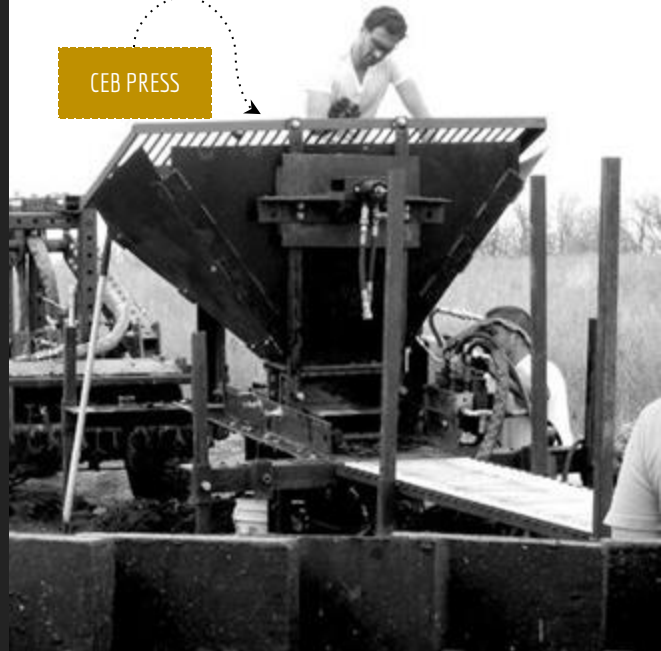
RESOURCES

STEM WALL FOUNDATION PROCEDURE | CONCRETE MIX RECIPE | SILL PLATE PROCEDURE

PROTRUDING REBAR ON ALL CORNERS ALLOWS THE FOUNDATION TO BE CONNECTED TO ADDITIONAL FOUNDATIONS—SO THE BUILDING CAN BE EXPANDED.



CEB WALLS



CEB PRESS

IN BRICK-WOOD HYBRID BUILDINGS, COMPRESSED EARTH BLOCKS (CEB) ARE STACKED OVER THE FOUNDATION TO FORM A WALL.

RESOURCES

CEB RECIPE | CEB STACKING PROCEDURE

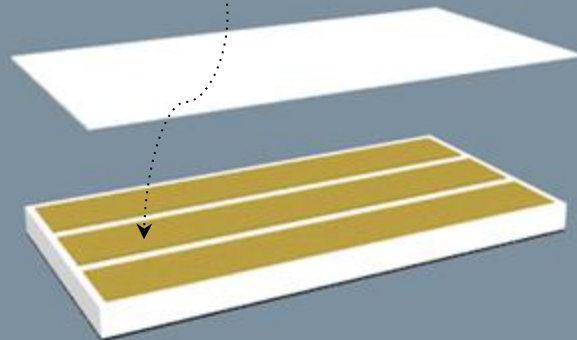
CEBs ARE PRODUCED WITH OSE'S
OPEN SOURCE BRICK PRESS.

STABILIZED CEBs ARE MADE FROM A MIXTURE OF CLAY SOIL AND LIME.



STRUCTURAL MODULES

INSULATION



ROOF, WALL, DOOR, WINDOW AND STEM WALL MODULES ARE RAPIDLY
BUILT BY SEVERAL TEAMS WORKING IN PARALLEL.

RESOURCES

STRUCTURAL MODULES LIBRARY

MODULES ARE PRE-FILLED WITH INSULATION
DURING THE FABRICATION PROCESS.



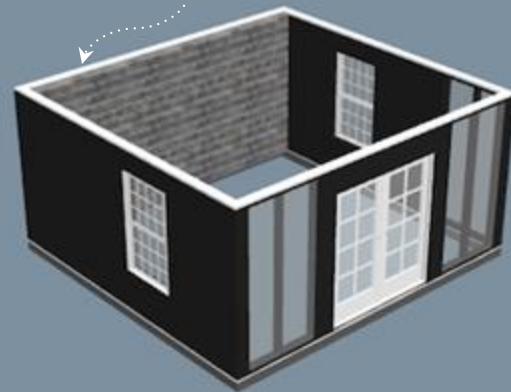
EXTERIOR WALL MODULES ARE ASSEMBLED OVER THE FOUNDATION AND THEN FASTENED TO THE SILL PLATE AND TO EACH OTHER.

ONCE ALL THE WALLS ARE IN PLACE, A BOND BEAM IS INSTALLED TO CONNECT ALL THE MODULES..



EXTERIOR WALLS

BOND BEAM



THE BOND BEAM—LONG WOOD BOARDS INSTALLED ON THE TOP EDGE OF THE WALLS—TIES THE MODULES TOGETHER AND PROVIDES HORIZONTAL STRENGTH.

RESOURCES

WALL INSTALL PROCEDURE, BOND BEAM PROCEDURE



STEM WALL

STEM WALL



ON SLOPED ROOF BUILDINGS THE STEM WALL PROVIDES THE HEIGHT NECESSARY FOR THE ROOF RISE. THESE MODULES ARE INSTALLED ON TOP OF THE BACK WALL.

A SECOND BOND BEAM IS USED TO TIE THE STEM WALL MODULES TOGETHER.

ADDITIONAL STEM WALLS CAN BE INSTALLED OVER ALL WALLS TO PROVIDE EXTRA HEIGHT TO THE BUILDING.

RESOURCES

STEM WALL MODULE, BOND BEAM PROCEDURE

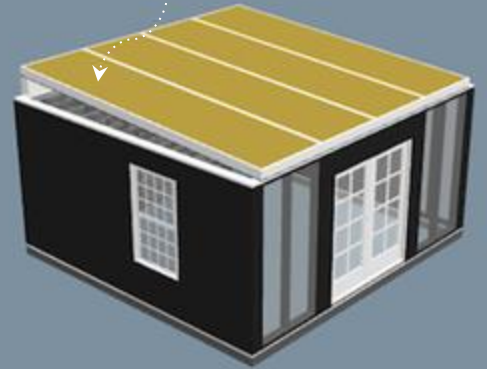


THE BOTTOM ROOF MODULES ARE LIFTED OVER THE WALLS. THESE PANELS ARE THEN FASTENED TO EACH OTHER, TO THE STEM WALL AND TO THE FRONT WALL.



BOTTOM ROOF

EXPOSED
FACED



SINCE THIS LAYER WILL BE COVERED WITH ADDITIONAL PANELS, BOTTOM ROOF MODULES HAVE EXPOSED TOP FACES.

RESOURCES

ROOF MODULE, ROOF INSTALL PROCEDURE

TOP ROOF
MODULE



TOP ROOF

TRIANGLE
SECTIONS

STEEL/SOLAR
PANELS



A SECOND LAYER OF ROOF MODULES IS INSTALLED OVER THE FIRST AND ITS TOP SURFACE LINED WITH TAR PAPER OR HOUSEWRAP.

RIBBED STEEL PANELS OR SOLAR PANELS ARE THEN INSTALLED OVER THE MODULES.

THE LATERAL GAPS ARE CLOSED OFF WITH INSULATED TRIANGLE SECTIONS.

RESOURCES

TRIANGLE SECTION PROCEDURE



FLOOR

IN-FLOOR
HEATING



RIGID INSULATION AND A HYDRONIC HEATED FLOOR SYSTEM ARE INSTALLED INSIDE. THE FLOOR IS FINISHED WITH WOOD PLANKS OR CEBs.

RESOURCES

HYDRONIC HEATED FLOOR PROCEDURE, WOOD FLOOR PROCEDURE, CEB FLOOR PROCEDURE, CEB RECIPE

HOT WATER PIPES RUN UNDER THE FLOOR TO PROVIDE HYDRONIC HEATING. THIS IN-FLOOR SYSTEM IS CONNECTED TO A CONTROL PANEL AND A HYDRONIC WOOD/PELLET STOVE.



INTERIOR WALLS

INTERIOR
WALLS



INTERIOR WALLS AND DOORS ARE INSTALLED OVER THE FLOOR.

THESE INTERIOR WALL MODULES ARE FASTENED TO EACH OTHER, TO THE FLOOR JOISTS, AND TO THE EXTERIOR WALLS.

ADDITIONAL TRIANGLE SECTIONS CLOSE THE SPAN BETWEEN THE TOP OF THE WALLS AND THE CEILING.

RESOURCES

WALL MODULE, DOOR MODULE, WALL INSTALL PROCEDURE



EXTERIOR FINISHING

SEALED
SEAMS



ALL SEAMS BETWEEN MODULES ARE FILLED WITH CAULK OR EXPANDING FOAM. WALLS ARE THEN PAINTED AND TRIMMED (OR COVERED WITH SIDING).

RESOURCES

SEAM SEALING PROCEDURE, STUCCO PROCEDURE

EXTERIOR WOOD WALLS MUST BE COATED WITH A WATERPROOFING MATERIAL (PAINT OR SIMILAR).

CEB WALLS MUST BE PROTECTED FROM CONTACT WITH WATER—THIS CAN BE ACHIEVED WITH STUCCO.



= DOWNLOAD THE "SWEET HOME 3D" EXAMPLE MODEL =

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